Ultrasonography of the ferret abdominal lymph nodes

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INTRODUCTION

Ultrasound is a diagnostic imaging modality and an almost indispensable technique in the daily practice of veterinarians across all species. In ferrets, lymphoma has been described as the third most common neoplastic disease[1]. Its clinical presentation often includes a marked lymphadenomegaly. However, until now little information has been published about the normality of the ferret abdominal ultrasonography, making alterations more difficult to detect and diagnose.

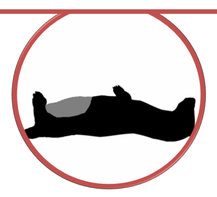
OBJECTIVE

To describe the anatomic position, size and ultrasonographic appearance of the abdominal lymph nodes in clinically healthy ferrets.

MATHERIALS AND METHODS

- 8 ferrets
- 9 month – 6 years
- 700g – 1.7kg
- 6 females – 2 males

- Determined as healthy by a specialist
- Sedated with butorphanol 0.5mg/kg
- Shaved abdomen
- Supine position



Esaote MyLab70 Xvision Ultrasound System
- 18MHz linear transducer
- Imaging Service specialists

Feline and ferret anatomical references[2-4]

OUTCOMES

- Frequency of detection
- Length and thickness
- Shape
- Echogenicity
- Homogeneity
- Capsule presence

RESULTS

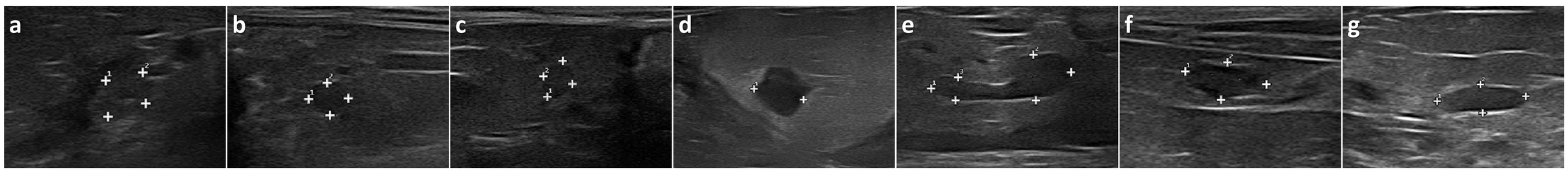
	Hepatic	Splenic	Gastric	Pancreatico-duodenal	Jejunal	Caudal mesenteric	Medial iliac
Frequency	63%	88%	75%	75%	100%	50%	100%
Length (mm)	8.9	4.8	4.9	5.5	12.1	5.3	7.3
SD (mm)	3.4	2.3	1.8	1.2	2.2	2.0	3.5
Thickness (mm)	4.2	3.1	3.0	3.9	4.5	3.3	2.6
SD (mm)	0.6	1.3	0.9	1.7	1.1	0.8	1.3
% Oval shape	60%	29%	50%	33%	25%	50%	88%
% Round shape	20%	57%	33%	67%	-	50%	13%
% C shape (e)	-	-	-	-	75%	-	-
% Other shape	20%	14%	17%	-	-	-	-
% Hypoechoic	60%	71%	100%	83%	50%	100%	50%
% Anechoic	20%	-	-	17%	-	-	-
% Isoechoic	20%	29%	-	-	50%	-	50%
% Hyperechoic	-	-	-	-	-	-	-
% Homogeneous	60%	71%	33%	33%	50%	50%	88%
% Capsule	60%	86%	50%	50%	100%	100%	100%

The hepatic (a), splenic (b), gastric (c), pancreaticoduodenal (d), jejunal (e), caudal mesenteric (f), and medial iliac (g) lymph nodes were detected in some or all ferrets.

Nineteen out of the 44 samples had an heterogeneous echogenicity pattern. Sixteen lymph nodes were homogeneous hypoechoic and adjusted to normal criteria. Twelve lymph nodes were homogeneous, hypoechoic, encapsulated, round to oval shaped, or C shaped in the case of the jejunal lymph node.

Lymph nodes length and thickness were adjusted to normal distributions with some outliers in the splenic, hepatic and medial iliac lymph nodes.

Table 1: Results of the ultrasonographic examination of the abdominal lymph nodes of 8 ferrets. Ultrasonographically measured length and thickness are represented as mean and standard deviation (SD). Shape, echogenicity, homogeneous and capsule frequencies are calculated regarding the measured lymph nodes.



DISCUSSION AND CONCLUSIONS

- The study provides an initial guide to the lymph node ultrasonography and reference parameters of size and shape.
- Lymph nodes did not adjust for normal criteria in most cases. Altered lymph nodes, defined as heterogeneous or non hypoechoic lymph nodes, were seen in all eight clinically healthy ferrets, regarding its age or weight.
- Altered lymph nodes could be reactive or neoplastic lymph nodes. Since all the ferrets included were clinically healthy at the moment of the study, we cannot distinguish whether heterogeneous echogenicity is a real alteration or a non relevant finding.
- The low number of samples and the wide range of ages may have had an impact on the evaluated frequencies.

REFERENCES

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